



FLOWTITE Case Studies

- Irrigation -



AMIATIT PIPE SYSTEMS




The FLOWTITE GRP piping products and accessories sold by the AMIANTIT Group offer many advantages for the use in water applications.

The worldwide product availability of FLOWTITE GRP pipes has established irrigation projects all over the world. This case study brochure represents only a small extract of the available references.



Many other countries around the world realized a huge number of installations and an increasing number of projects are recently in work.

Further information about additional references and case studies can be found on our website at www.amiantit.com!



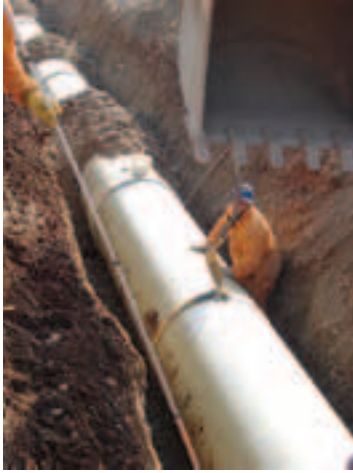
Case Study -1-

PROJECT NAME:	Riego la Surpina	
Community/Country:	Gral. San Martin, Provincia de Chaco, Argentina	
Amiantit location	AMITECH Argentina	
Description:	The irrigation project was established in an unproductive area of the Chaco province, in the north of Argentina. After pipes installation and all the irrigation system, the area became in an important agro producer, with more than 10,000 ha harvested.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6 bar	
<i>type of project:</i>	<ul style="list-style-type: none"> ■ new installation 	
<i>demanded standards / specifications / approvals:</i>	IRAM 13432 AWWA C950	
<i>Special requirement on pipe-system:</i>	Light weight, fast and easy installation	
		
	<i>chosen pipe system:</i>	<ul style="list-style-type: none"> ■ GRP cross winded
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight □ corrosion resistance ■ flow characteristics □ chem. properties □ mech. properties □ price
Project owner:	Riego El Bellaco, Bs As	
consultant / engineer:	Irri Management, Pilar Bs As	
contractor:	COINDESA, Bs As	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	36,780	
<i>Diameter DN min / max (mm):</i>	600 / 1500	
<i>Pressure PN min / max (bar):</i>	6	
<i>Stiffness SN min / max (N/m²):</i>	2500	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows, reducers, concentric and tangential tees	
Installation Details:		
<i>type:</i>	<ul style="list-style-type: none"> ■ open trench 	
<i>trench dimensions (m):</i>	1.2 to 2.2	
<i>laying depth (m):</i>	1.5 to 4.5	
<i>native soil type:</i>	Loose medium	
<i>backfill soil type / compaction:</i>	Native soil	
<i>thrust blocks / lockjoints:</i>	Yes	
<i>deflection min/max:</i>	max. 3°	
<i>quality measures during installation:</i>	Tightness test per section	
<i>Project duration:</i>	7 months	
<i>Year start / end:</i>	2008	
		




Case Study -2-

PROJECT NAME:	Cosan Irrigation	
Community/Country:	Brasil- Jantai Goias	
Amiantit location	AMITECH Brasil	
Description:	Cosan company to produce more than 56 million tons of sugar in 2010, 27% more than previous harvest volume. To reach this target, a FLOWTITE GRP aqueduct was built.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6-10 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	AWWA C950 DIN	
<i>Special requirement on pipe-system:</i>	Durability and installation ease	
		<p><i>chosen pipe system:</i> ■ GRP round filament;</p> <p><i>why our product?</i></p> <ul style="list-style-type: none"> ■ light weight ■ corrosion resistance □ flow characteristics □ chem. properties □ mech. properties □ other reasons?
Project owner:	Cosan S/A – Jatai Goias	
consultant / engineer:	Cosan S/A – Jatai Goias	
contractor:	Cosan S/A – Jatai Goias	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	4,828	
<i>Diameter DN min / max (mm):</i>	600 / 700	
<i>Pressure PN min / max (bar):</i>	6 / 10	
<i>Stiffness SN min / max (N/m²):</i>	2500	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	no	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	1.10 – 1.80	
<i>native soil type:</i>	Loose Medium	
<i>backfill soil type / compaction:</i>	Native soil	
<i>thrust blocks / lockjoints:</i>	Yes	
<i>Project duration:</i>	< 12 months	
<i>Year start / end:</i>	2009	



Case Study -3-

PROJECT NAME:	Brenta-Cittadella	
Community/Country:	Italy, Cittadella	
Amiantit location	AMITECH Germany GmbH	
Description:	Agricultural irrigation system	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	10 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	European standard; Austrian standard	
<i>Special requirement on pipe-system:</i>	Pressure pipe; fast and easy installation; REKA coupling	
<i>project value in US\$:</i>	US\$ > 1,000,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight □ corrosion resistance □ flow characteristics ■ positive experience with Amitech / FLOWTITE GRP-pipes in the past
Project owner:	Consorzio Brenta-Cittadella	
consultant / engineer:	Consorzio Brenta-Cittadella	
contractor:	Gelmini Lidio CO.MA.C	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	12,144	
<i>Diameter DN min / max (mm):</i>	350 / 700	
<i>Pressure PN min / max (bar):</i>	10	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	No	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	Double the pipe diameter	
<i>laying depth (m):</i>	2	
<i>native soil type:</i>	Soil class G3	
<i>backfill soil type / compaction:</i>	Sand & gravel	
<i>thrust blocks / lockjoints:</i>	Yes	
<i>deflection min/max:</i>	max. 1°	
<i>quality measures during installation:</i>	Tightness test per section	
<i>Project duration:</i>	12 months	
<i>Year start / end:</i>	2008 / 2009	
Owner/Consultant/ Contractor comments:	The Consorzio was very satisfied with the preparation support, the excellent delivery time and the general certain quality of the FLOWTITE products.	
		




Case Study -4-

PROJECT NAME:	Campigo	
Community/Country:	Italy / San Floriano di Castelfranco-Veneto	
Amiantit location	AMITECH Germany GmbH	
Description:	Agricultural irrigation system	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	10 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	European standard; Austrian standard	
<i>Special requirement on pipe-system:</i>	Pressure pipe; fast and easy installation; REKA coupling	
<i>project value in US\$:</i>	US\$ 1,900,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight □ corrosion resistance □ flow characteristics ■ positive experience with Amitech / FLOWTITE GRP-pipes in the past
Project owner:	Consorzio Ledra Tagliamento, Montebelluna (TV), Italy	
consultant / engineer:	Consorzio Ledra Tagliamento, Montebelluna (TV), Italy	
contractor:	Manzato Andreola, Canella Vanni	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	7,834	
<i>Diameter DN min / max (mm):</i>	1000	
<i>Pressure PN min / max (bar):</i>	10	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	No	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	Double the pipe diameter	
<i>laying depth (m):</i>	2	
<i>native soil type:</i>	Soil class G3	
<i>backfill soil type / compaction:</i>	Sand & gravel	
<i>thrust blocks / lockjoints:</i>	yes, 2	
<i>deflection min/max:</i>	2°	
<i>quality measures during installation:</i>	Tightness test per section	
<i>Project duration:</i>	12 months	
<i>Year start / end:</i>	2008	
Owner/Consultant/ Contractor comments:	The Consorzio was very satisfied with the preparation support, the excellent delivery time and the general certain quality of the FLOWTITE products.	
		




Case Study -5-

PROJECT NAME:	Nerves della Battaglia	
Community/Country:	Italy / Veneto	
Amiantit location	AMITECH Germany GmbH	
Description:	Agricultural irrigation system	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	16 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	European standard; Austrian standard	
<i>Special requirement on pipe-system:</i>	Pressure pipe; fast and easy installation; REKA coupling	
<i>project value in US\$:</i>	US\$ 1,400,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight □ corrosion resistance □ flow characteristics ■ positive experience with Amitech / FLOWTITE GRP-pipes in the past
Project owner:	Cons. Destra, Piave	
consultant / engineer:	Cons. Destra, Piave	
contractor:	Manzato Andreola, Canella Vanni	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	9,500	
<i>Diameter DN min / max (mm):</i>	400 / 700	
<i>Pressure PN min / max (bar):</i>	16	
<i>Stiffness SN min / max (N/m²):</i>	10000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	No	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	Double the pipe diameter	
<i>laying depth (m):</i>	2	
<i>native soil type:</i>	Soil class G3	
<i>backfill soil type / compaction:</i>	Sand & gravel	
<i>thrust blocks / lockjoints:</i>	No	
<i>deflection min/max:</i>	max. 2°	
<i>quality measures during installation:</i>	Tightness test per section	
<i>Project duration:</i>	12 months	
<i>Year start / end:</i>	2008 / 2009	
Owner/Consultant/ Contractor comments:	Also at difficult weather conditions (intense rain) in the construction period, Amitech was able to ensure certain delivery and consistent quality standards.	


Case Study -6-

PROJECT NAME:	Metohija Project	
Community/Country:	Pristina, Kosovo	
Amiantit location	APS Norway AS - Vera AS	
Description:	Supply of 130 mill. m ³ water per year, mainly for irrigation, but also for drinking water and industrial supply.	
<i>application:</i>	Irrigation, Raw water, Potable water	
<i>transported medium</i>	Water	
<i>working pressure</i>	12 bar max.	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	AWWA / ASTM	
<i>Special requirement on pipe-system:</i>	Light weight, difficult transport through rough terrain, none corrosive	
<i>project value in US\$:</i>	US\$ 10,000,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance □ flow characteristics □ chem. properties □ mech. properties ■ price
Project owner:	Vodoprivredna Organizacija Metohija (VOM), Prizren, Kosovo	
consultant / engineer:	Kosovoproject Hydroengineer Boal, Belgrade	
contractor:	various	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	45,000	
<i>Diameter DN min / max (mm):</i>	800 / 1800	
<i>Pressure PN min / max (bar):</i>	2.5 / 12	
<i>Stiffness SN min / max (N/m²):</i>	1500	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Bends, tees, flanges	
Installation Details:		
<i>type:</i>	■ open trench	
<i>laying depth (m):</i>	up to 4 m	
<i>backfill soil type / compaction:</i>	Sand – gravel mixture	
<i>thrust blocks / lockjoints:</i>	No	
<i>deflection min/max:</i>	1° / 2°	
<i>quality measures during installation:</i>	Internal field joint tester for joints, pressure tested to 1.5 times operating pressure, just after assembly.	
<i>Project duration:</i>	30 months	
<i>Year start / end:</i>	1984 / 1986	
Summary:	The irrigation and water supply and distribution systems are fully operational, with all 10.250 hectares under cultivation. The outlook for Kosovo Province and the Republic of Serbia has improved measurably, as a result of this project.	
		



Case Study -7-

PROJECT NAME:	Safeguard of the agrumicole area of Sebt El-Guerdane	
Community/Country:	El-Guerdane / Morocco	
Amiantit location	AMITECH Maroc	
Description:	Irrigation of 10.600 hectares agricultural land with citrus fruits at Sebt El-Guerdane, in the province of Taroudant with 45 million m ³ of water per year. Starting from the hydraulic complex Aoulouz and Mokhtar Soussi, each hectare will receive 4,000 m ³ of water during the crop year.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	16 bar max.	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	ISO 10639 AWWA C950	
<i>Special requirement on pipe-system:</i>	Supply within time limits	
<i>project value in US\$:</i>	US\$ 42,300,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ chem. properties ■ mech. properties ■ installation done in a short time, soundness, durability, economical
Project owner:	Amensouss/El Guerdane	
consultant / engineer:	Abdelatif Farih/Adi/Morocco	
contractor:	Louis Raymond Baudrand/Stam/Morocco	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	186,000	
<i>Diameter DN min / max (mm):</i>	400 / 1400	
<i>Pressure PN min / max (bar):</i>	6 / 16	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows, flanges, wall coupling, thrust ring, tees, branches, reducers	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	1 - 2.5	
<i>laying depth (m):</i>	1.2 - 4	
<i>native soil type:</i>	Soil class G3	
<i>backfill soil type / compaction:</i>	Soil class SC2 / hydraulic compaction	
<i>thrust blocks / lockjoints:</i>	Yes	
<i>deflection min/max:</i>	1° / 3°	
<i>quality measures during installation:</i>	Field hydro testing	
<i>Project duration:</i>	20 months	
<i>Year start / end:</i>	2007 / 2009	
Summary:	AMITECH Maroc delivered the pipes within 20 months which allows now 600 farms (370 farmers) access to irrigated water. FLOWTITE GRP Pipes were the preferred choice due to easy installation resulting in a short project duration.	
		

Case Study -8-

PROJECT NAME:	Irrigation Arabayona	
Community/Country:	Salamanca, Castilla y León (Spain)	
Amiantit location	AMITECH Spain, S.A.	
Description:	The project irrigates 3,319 hectares of dry land. More than 600 farmer benefit from the measure.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	16 bar max.	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	FLOWTITE quality standards	
<i>Special requirement on pipe-system:</i>	Light weight and no corrosion	
<i>project value in US\$:</i>	US\$ 5,500,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>other materials in this project?</i>	PVC
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics □ chem. properties □ mech. properties □ price
Project owner:	Agricultura. Junta de Castilla y León, Madrid	
consultant / engineer:	TRAGSATEC, Madrid	
contractor:	UTE ALDESA-GRUPORAGA, Madrid	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	23,400	
<i>Diameter DN min / max (mm):</i>	500 / 1400	
<i>Pressure PN min / max (bar):</i>	6 / 16	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows, tees, reducers	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	1,80 x DN	
<i>laying depth (m):</i>	3.0 m	
<i>native soil type:</i>	Hard clay	
<i>backfill soil type / compaction:</i>	Gravel, soil class SC1	
<i>thrust blocks / lockjoints:</i>	Concrete thrust blocks	
<i>deflection min/max:</i>	1.5° / 3°	
<i>Project duration:</i>	7 months	
<i>Year start / end:</i>	2008 / 2009	
		



Case Study -9-

PROJECT NAME:	Canal Alto de los Payuelos I y II	
Community/Country:	Spain, Castilla y León	
Amiantit location	AMITECH Spain	
Description:	The project provides water for the irrigation of three big areas with a total of 24,580 ha.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	16 bar max.	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	FLOWTITE quality standards	
<i>Special requirement on pipe-system:</i>	Easy assembling installation and low prices	
<i>project value in US\$:</i>	US\$ 17,000,000	
<i>chosen pipe system:</i>	■ GRP round filament	
<i>other materials in this project?</i>	Concrete cylinder pipe and PV	
<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ chem. properties ■ mech. properties ■ price 	
Project owner:	AGUAS DEL DUERO, Valladolid	
consultant / engineer:	TRAGSATEC, Madrid	
contractor:	CORSAN CORVIAM / ALDESA BEGAR, Madrid	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	112,667	
<i>Diameter DN min / max (mm):</i>	400 / 2000	
<i>Pressure PN min / max (bar):</i>	6 / 10	
<i>Stiffness SN min / max (N/m²):</i>	5000, 10000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	approx. 500 elbows and tees	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	1.75 x DN	
<i>laying depth (m):</i>	4.5	
<i>native soil type:</i>	Natural sand	
<i>backfill soil type / compaction:</i>	Selected natural sand / 90%	
<i>thrust blocks / lockjoints:</i>	No	
<i>deflection min/max:</i>	1.5° / 3°	
<i>quality measures during installation:</i>	Pressure tests and leakage tests	
<i>Project duration:</i>	11 months	
<i>Year start / end:</i>	2007 / 2008	
Summary:	Original specifications in the projects were steel cylinder concrete pipe. Price / easy and quick assembling / corrosion resistance and excellent commercial job of Amitech were key points for changing to GRP.	



Case Study -10-

PROJECT NAME:	Estación de Bombeo del Sector VII del Páramo Medio	
Community/Country:	Castilla y León / Spain	
Amiantit location	AMITECH Spain, S.A	
Description:	Extension of an existing irrigation system by installing a new GRP pipeline network and pumping stations in a second area.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	FLOWTITE quality standards	
<i>Special requirement on pipe-system:</i>	Light weight and corrosion resistance	
<i>project value in US\$:</i>	US\$ 1,600,000	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics ■ chem. properties □ mech. properties □ price
Project owner:	ITACYL. Castilla y León. León	
consultant / engineer:	TRAGSATEC LEÓN, Leon	
contractor:	SACYR, Madrid	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	3,100	
<i>Diameter DN min / max (mm):</i>	1600 / 2200	
<i>Pressure PN min / max (bar):</i>	6	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbows	
Installation Details:		
<i>type:</i>	■ open trench	
<i>trench dimensions (m):</i>	4	
<i>laying depth (m):</i>	2	
<i>native soil type:</i>	Gravel, silt and clay, soil class G3	
<i>backfill soil type / compaction:</i>	Gravel, soil class SC1	
<i>thrust blocks / lockjoints:</i>	Yes	
<i>deflection min/max:</i>	1.5° / 3°	
<i>quality measures during installation:</i>	Three leakage tests, pressure tests	
<i>Project duration:</i>	2.5 months	
<i>Year start / end:</i>	2009	
		



Case Study -11-

PROJECT NAME:	Batman Right and Left Banks Siphon Lines Project	
Community/Country:	Batman, Turkey	
Amiantit location	SUBOR GAP Boru Sanayi ve Ticaret A.Ş.	
Description:	Batman is located in the northeast of Anatolia and there are several plains and necessity of water in this region supplies by such as irrigation projects. That is, the project will contribute to the prosperity of the region.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	4 - 10 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	TSEN 1796 ASTM AWWA	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance ■ flow characteristics □ chem. properties □ mech. properties ■ price
Project owner:	General Directorate of State Hydraulic Works (DSİ), Turkey, Batman	
consultant / engineer:	General Directorate of State Hydraulic Works (DSİ), Turkey, Batman	
contractor:	Fernas Construction Company, Turkey, Ankara	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	13,858	
<i>Diameter DN min / max (mm):</i>	2100 / 2300	
<i>Pressure PN min / max (bar):</i>	4 / 10	
<i>Stiffness SN min / max (N/m²):</i>	5000	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbow, tees, reducer, flanges	
Installation Details:		
<i>type:</i>	■ buried	
<i>trench dimensions (m):</i>	9	
<i>laying depth (m):</i>	1.3	
<i>native soil type:</i>	-	
<i>backfill soil type / compaction:</i>	Gravel/impact compactor, plate compactor	
<i>thrust blocks / lockjoints:</i>	150 thrust blocks	
<i>deflection min/max:</i>	0.5°	
<i>quality measures during installation:</i>	Filling test	
<i>Project duration:</i>	6 months	
<i>Year start / end:</i>	2009 / 2011	
Summary:	FLOWTITE GRP Pipes were preferred due to their easy installation features. That is, it was possible to complete the project in a short time.	

Case Study -12-

PROJECT NAME:	Sivas Ulaş Karacalar Irrigation Project	
Community/Country:	Sivas, Turkey	
Amiantit location	SUBOR Boru Sanayi ve Ticaret A.Ş.	
Description:	Sivas is located in the middle of Anatolia and by the necessity of water for the region, irrigation projects are the point of the solution.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	6 - 10 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	TSEN 1796 ASTM AWWA	
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>other materials in this project?</i>	HDPE
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance □ flow characteristics □ chem. properties □ mech. properties ■ price
Project owner:	General Directorate of State Hydraulic Works (DSİ), Turkey, Sivas	
consultant / engineer:	General Directorate of State Hydraulic Works (DSİ), Turkey, Sivas	
contractor:	Deryal Construction Company, Turkey, Ankara	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	50,139	
<i>Diameter DN min / max (mm):</i>	450 / 1600	
<i>Pressure PN min / max (bar):</i>	4 / 10	
<i>Stiffness SN min / max (N/m²):</i>	2500	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbow, tees, reducer, flanges	
Installation Details:		
<i>type:</i>	■ buried	
<i>trench dimensions (m):</i>	1 - 1.5	
<i>laying depth (m):</i>	1.5	
<i>native soil type:</i>	-	
<i>backfill soil type / compaction:</i>	Sand	
<i>thrust blocks / lockjoints:</i>	150 thrust blocks	
<i>deflection min/max:</i>	1.5°	
<i>quality measures during installation:</i>	Hydrostatic test	
<i>Project duration:</i>	24 months	
<i>Year start / end:</i>	2009 / 2010	
Summary:	FLOWTITE GRP pipes are preferred by many irrigation projects in several regions in Turkey. Thanks to the non-corrosive structure and lightweight design FLOWTITE GRP pipes were chosen for Sivas Ulaş Karacalar Irrigation Project.	

Case Study -13-

PROJECT NAME:	Samsun Vezirköprü Plain Irrigation Project	
Community/Country:	Samsun, Turkey	
Amiantit location	SUBOR Boru Sanayi ve Ticaret A.Ş.	
Description:	For the irrigation of agricultural land sized 11,870 ha, water from the Vazirköprü Dam is transferred through a tunnel of 2,500 m length. A secondary network with smaller diameters distributes the water to the fields for irrigation.	
<i>application:</i>	Irrigation	
<i>transported medium</i>	Raw water	
<i>working pressure</i>	4 - 10 bar	
<i>type of project:</i>	■ new installation	
<i>demanded standards / specifications / approvals:</i>	TSEN 1796 ASTM AWWA	
		
	<i>chosen pipe system:</i>	■ GRP round filament
	<i>other materials in this project?</i>	HDPE
	<i>why our product?</i>	<ul style="list-style-type: none"> ■ light weight ■ corrosion resistance □ flow characteristics □ chem. properties □ mech. properties ■ price
Project owner:	General Directorate of State Hydraulic Works (DSİ), Turkey, Samsun	
consultant / engineer:	General Directorate of State Hydraulic Works (DSİ), Turkey, Samsun	
contractor:	İMA Engineering Construction Company, Turkey, Ankara	
Pipe Details - material:		
<i>Total pipeline length (m):</i>	15,000	
<i>Diameter DN min / max (mm):</i>	450 / 2000	
<i>Pressure PN min / max (bar):</i>	4 / 16	
<i>Stiffness SN min / max (N/m²):</i>	2500	
<i>joint types:</i>	FLOWTITE standard couplings	
<i>fittings used:</i>	Elbow, tees, reducer, flanges	
Installation Details:		
<i>type:</i>	■ buried	
<i>trench dimensions (m):</i>	3.5	
<i>laying depth (m):</i>	1	
<i>native soil type:</i>	-	
<i>backfill soil type / compaction:</i>	Sand	
<i>thrust blocks / lockjoints:</i>	60 thrust blocks	
<i>deflection min/max:</i>	1°	
<i>quality measures during installation:</i>	Hydrostatic test	
<i>Project duration:</i>	60 months	
<i>Year start / end:</i>	2007 / 2012	
Summary:	Two parallel GRP pipelines diameters DN 2000mm and DN 600mm were installed in the same trench. The lightweight design provided an easy and fast installation in the difficult terrain. Due to pipe nesting, huge cost savings in transport were achieved.	

Handbook is intended as a guide only. All values listed in the product specifications are nominal. Unsatisfactory product results may occur due to environmental fluctuations, variations in operating procedures, or interpolation of data. We highly recommend that any personnel using this data have specialised training and experience in the application of these products and their normal installation and operating conditions. The engineering staff should always be consulted before any of these products are installed to ensure the suitability of the products for their intended purpose and applications. We hereby state that we do not accept any liability, and will not be held liable, for any losses or damage which may result from the installation or use of any products listed in this handbook as we have not determined the degree of care required for product installation or service. We reserve the right to revise this data, as necessary, without notice. We welcome comments regarding this handbook.



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